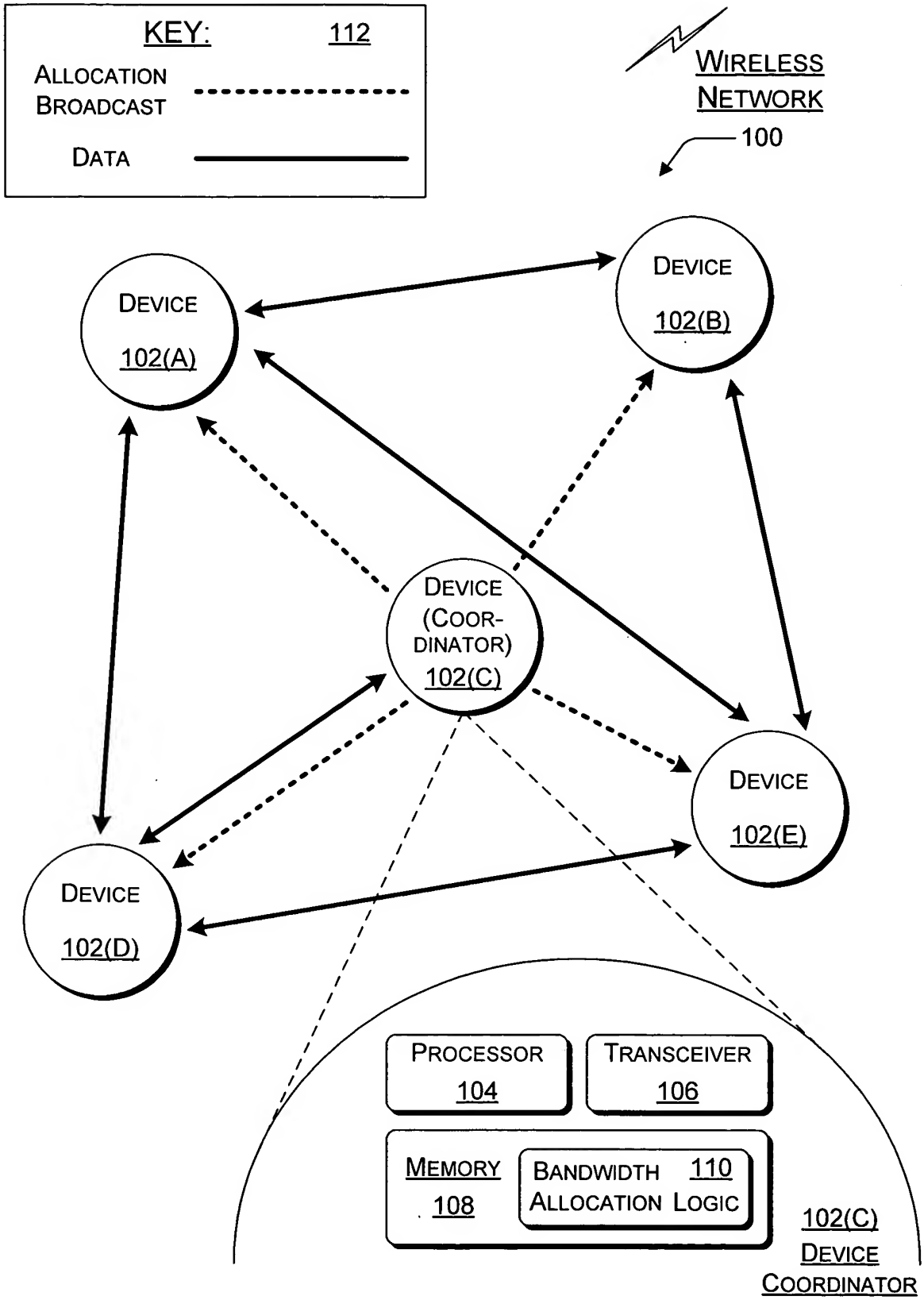
KEY: 112
ALLOCATION BROADCAST
DATA
WIRELESS NETWORK
100
DEVICE 102(A)
DEVICE 102(B)
DEVICE (COORDINATOR) 102(C)
DEVICE 102(D)
DEVICE 102(E)
PROCESSOR 104
TRANSCEIVER 106
MEMORY 108
BANDWIDTH ALLOCATION LOGIC 110
102(C) DEVICE COORDINATOR

FIG. 1

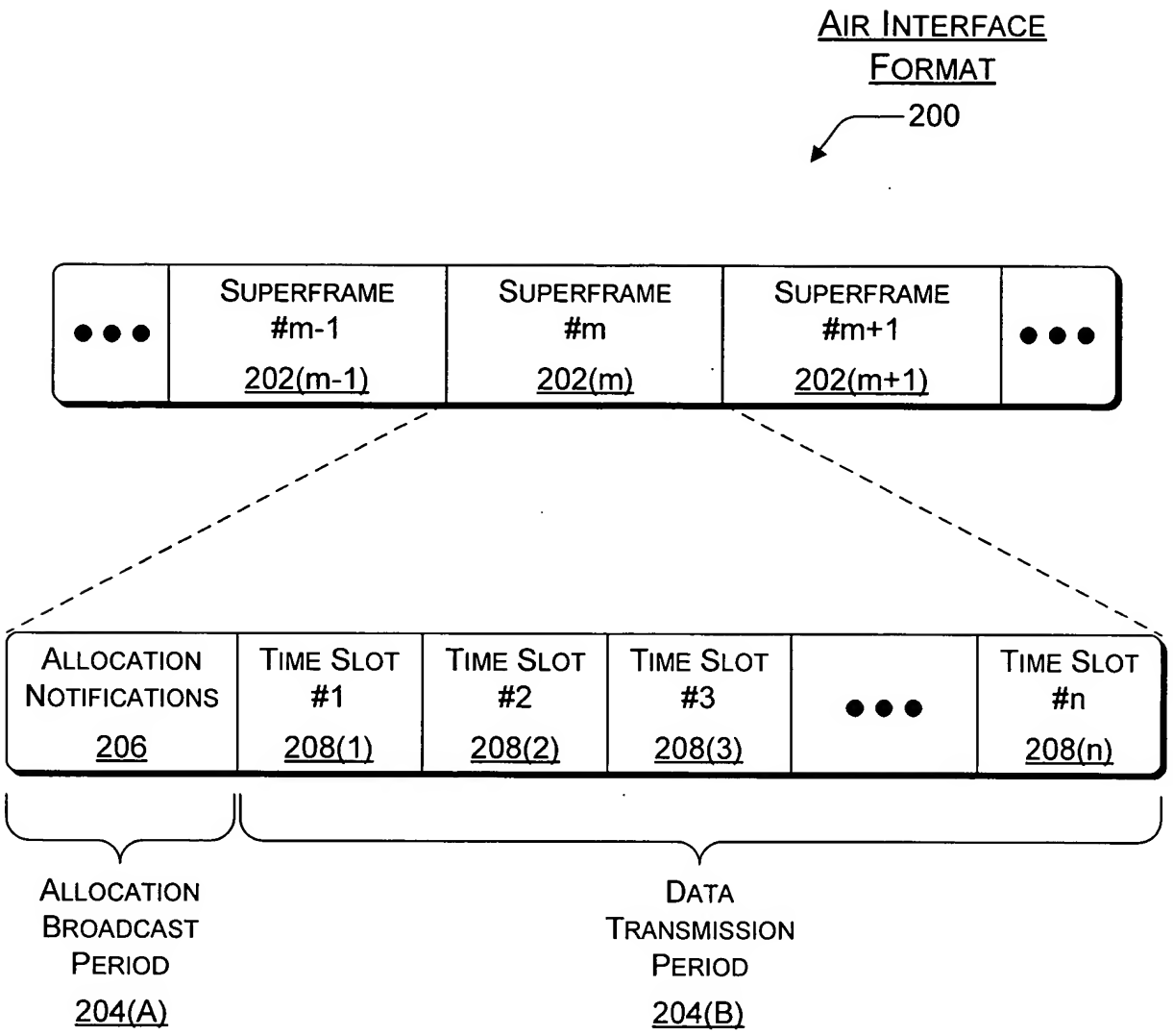
AIR INTERFACE FORMAT
200
SUPERFRAME #m-1
202(m-1)
SUPERFRAME #m
202(m)
SUPERFRAME #m+1
202(m+1)
ALLOCATION NOTIFICATIONS
206
TIME SLOT #1
208(1)
TIME SLOT #2
208(2)
TIME SLOT #3
208(3)
TIME SLOT #n
208(n)
ALLOCATION BROADCAST PERIOD
204(A)
DATA TRANSMISSION PERIOD
204(B)

FIG. 2

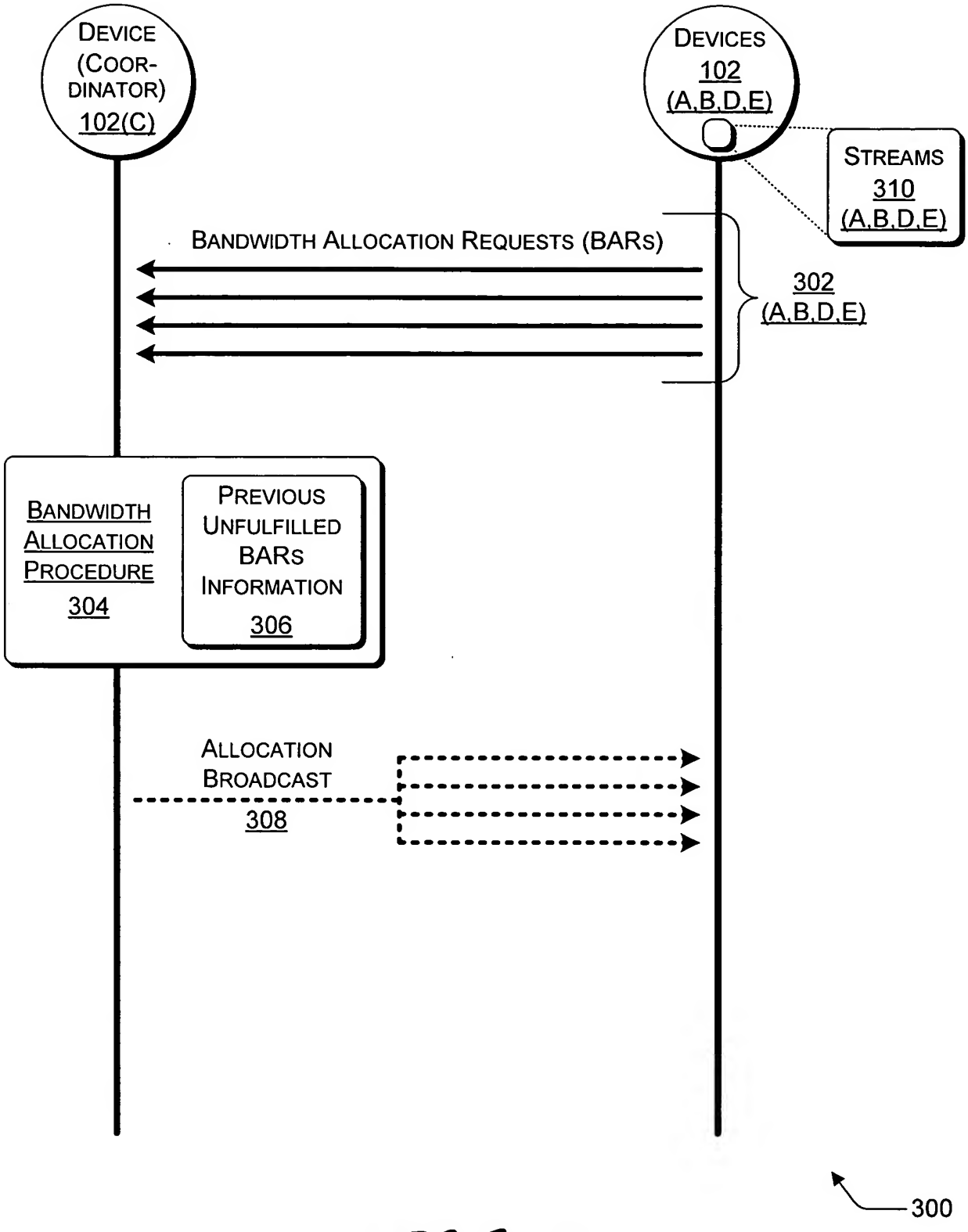
DEVICE (COORDINATOR) 102(C)
DEVICES 102 (A,B,D,E)
STREAMS 310 (A,B,D,E)
BANDWIDTH ALLOCATION REQUESTS (BARs)
302 (A,B,D,E)
BANDWIDTH ALLOCATION PROCEDURE 304
PREVIOUS UNFULFILLED BARs INFORMATION 306
ALLOCATION BROADCAST 308
300

FIG. 3

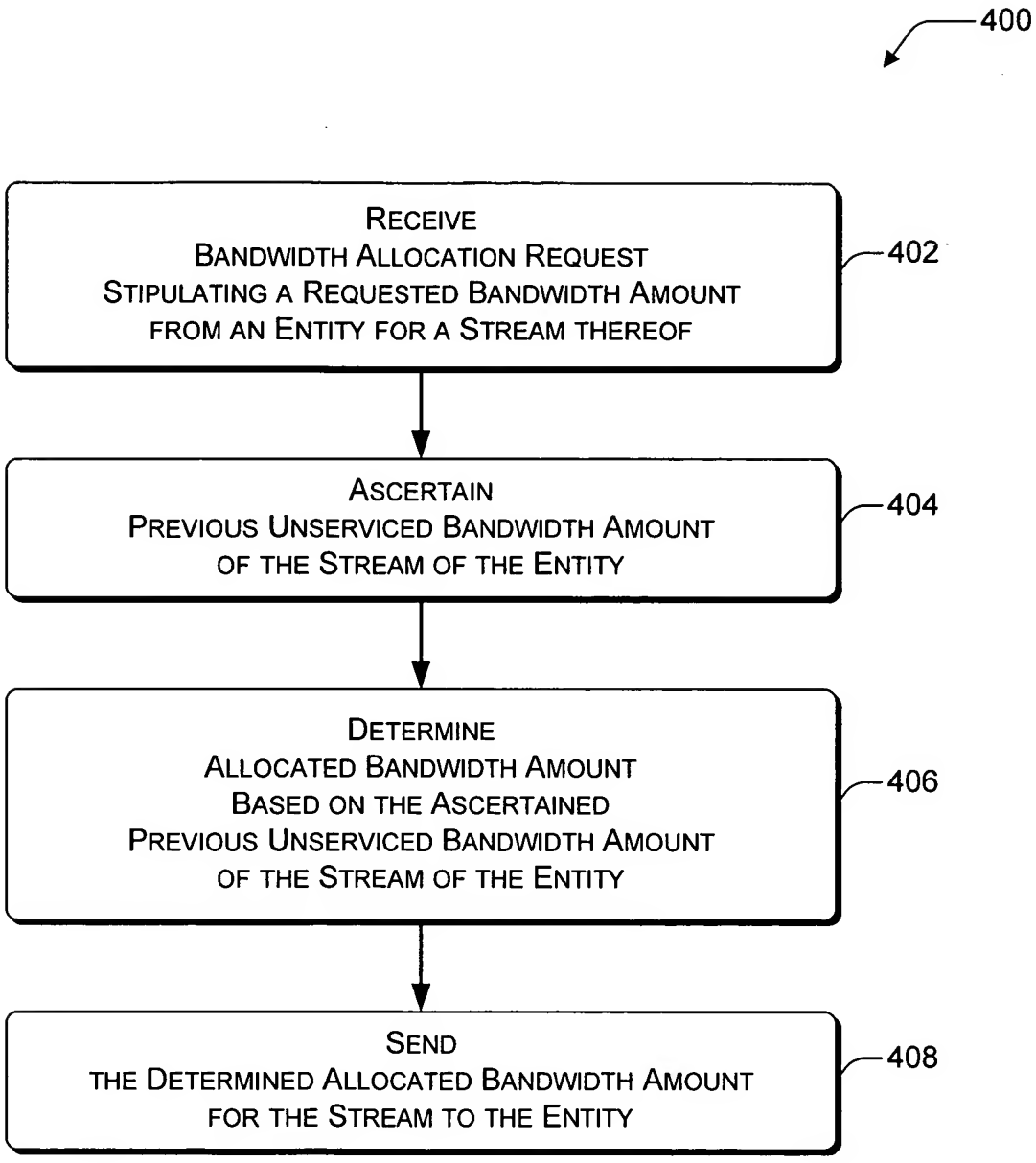
400
RECEIVE
BANDWIDTH ALLOCATION REQUEST
STIPULATING A REQUESTED BANDWIDTH AMOUNT
FROM AN ENTITY FOR A STREAM THEREOF
402
ASCERTAIN
PREVIOUS UNSERVICED BANDWIDTH AMOUNT
OF THE STREAM OF THE ENTITY
404
DETERMINE
ALLOCATED BANDWIDTH AMOUNT
BASED ON THE ASCERTAINED
PREVIOUS UNSERVICED BANDWIDTH AMOUNT
OF THE STREAM OF THE ENTITY
406
SEND
THE DETERMINED ALLOCATED BANDWIDTH AMOUNT
FOR THE STREAM TO THE ENTITY
408

FIG. 4

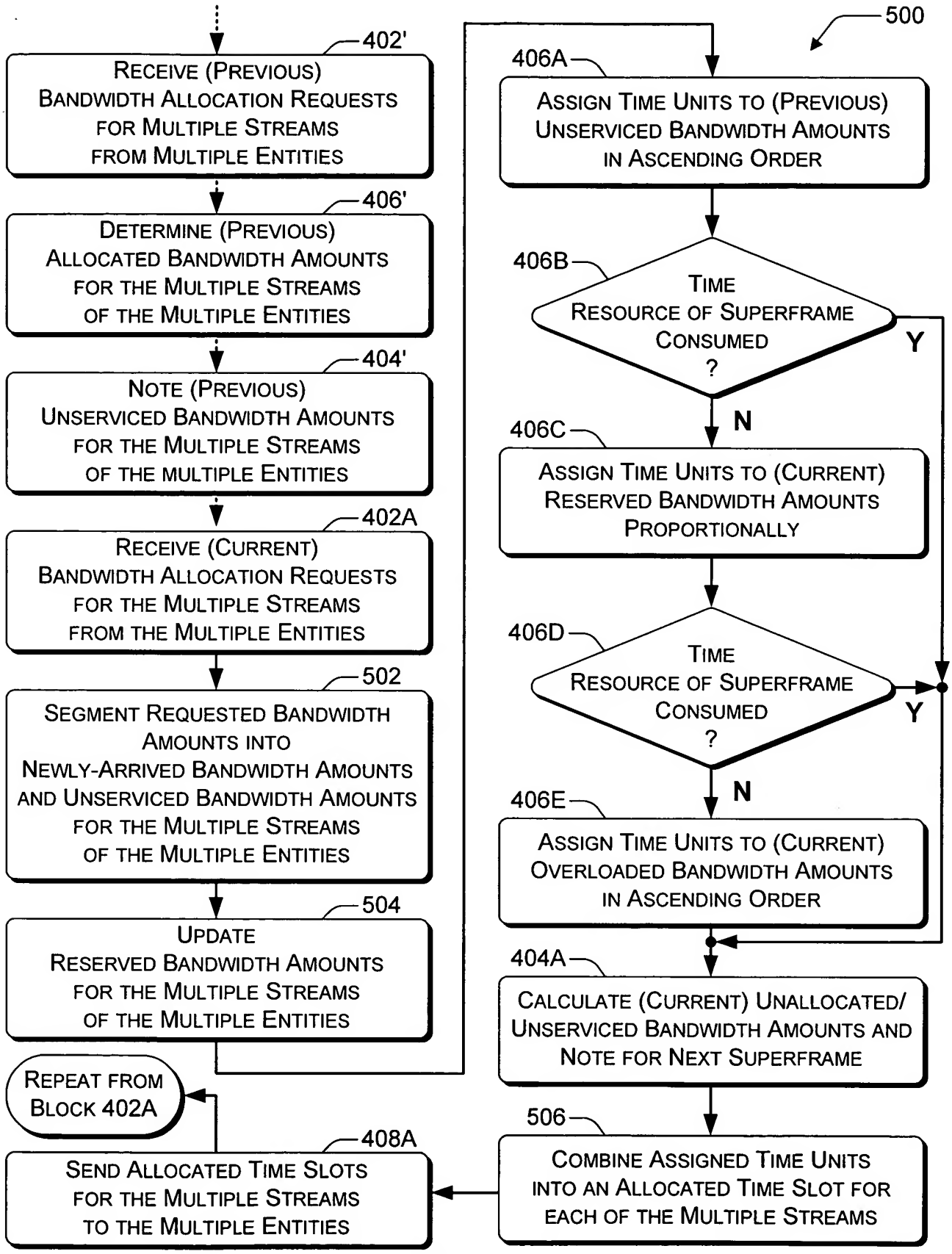
500
402'
RECEIVE (PREVIOUS) BANDWIDTH ALLOCATION REQUESTS FOR MULTIPLE STREAMS FROM MULTIPLE ENTITIES
406'
DETERMINE (PREVIOUS) ALLOCATED BANDWIDTH AMOUNTS FOR THE MULTIPLE STREAMS OF THE MULTIPLE ENTITIES
404'
NOTE (PREVIOUS) UNSERVICED BANDWIDTH AMOUNTS FOR THE MULTIPLE STREAMS OF THE MULTIPLE ENTITIES
402A
RECEIVE (CURRENT) BANDWIDTH ALLOCATION REQUESTS FOR THE MULTIPLE STREAMS FROM THE MULTIPLE ENTITIES
502
SEGMENT REQUESTED BANDWIDTH AMOUNTS INTO NEWLY-ARRIVED BANDWIDTH AMOUNTS AND UNSERVICED BANDWIDTH AMOUNTS FOR THE MULTIPLE STREAMS OF THE MULTIPLE ENTITIES
504
UPDATE RESERVED BANDWIDTH AMOUNTS FOR THE MULTIPLE STREAMS OF THE MULTIPLE ENTITIES
REPEAT FROM BLOCK 402A
408A
SEND ALLOCATED TIME SLOTS FOR THE MULTIPLE STREAMS TO THE MULTIPLE ENTITIES
506
COMBINE ASSIGNED TIME UNITS INTO AN ALLOCATED TIME SLOT FOR EACH OF THE MULTIPLE STREAMS
404A
CALCULATE (CURRENT) UNALLOCATED/ UNSERVICED BANDWIDTH AMOUNTS AND NOTE FOR NEXT SUPERFRAME
406E
ASSIGN TIME UNITS TO (CURRENT) OVERLOADED BANDWIDTH AMOUNTS IN ASCENDING ORDER
406D
TIME RESOURCE OF SUPERFRAME CONSUMED ?
Y
N
406C
ASSIGN TIME UNITS TO (CURRENT) RESERVED BANDWIDTH AMOUNTS PROPORTIONALLY
406B
TIME RESOURCE OF SUPERFRAME CONSUMED ?
Y
N
406A
ASSIGN TIME UNITS TO (PREVIOUS) UNSERVICED BANDWIDTH AMOUNTS IN ASCENDING ORDER

FIG. 5

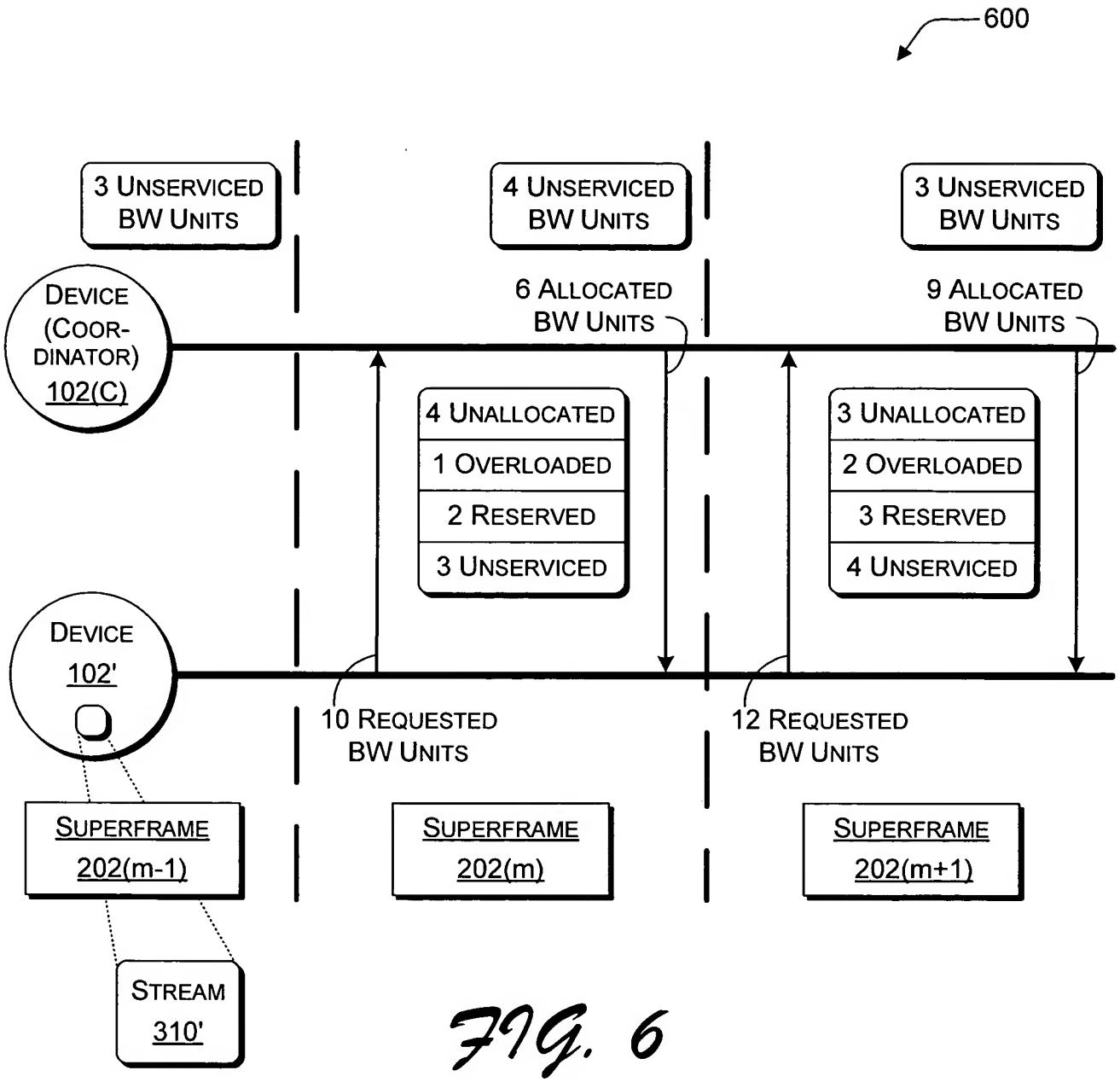
600
3 UNSERVICED BW UNITS
4 UNSERVICED BW UNITS
3 UNSERVICED BW UNITS
DEVICE (COOR-DINATOR) 102(C)
6 ALLOCATED BW UNITS
9 ALLOCATED BW UNITS
4 UNALLOCATED
1 OVERLOADED
2 RESERVED
3 UNSERVICED
3 UNALLOCATED
2 OVERLOADED
3 RESERVED
4 UNSERVICED
DEVICE 102'
10 REQUESTED BW UNITS
12 REQUESTED BW UNITS
SUPERFRAME 202(m-1)
SUPERFRAME 202(m)
SUPERFRAME 202(m+1)
STREAM 310'

FIG. 6

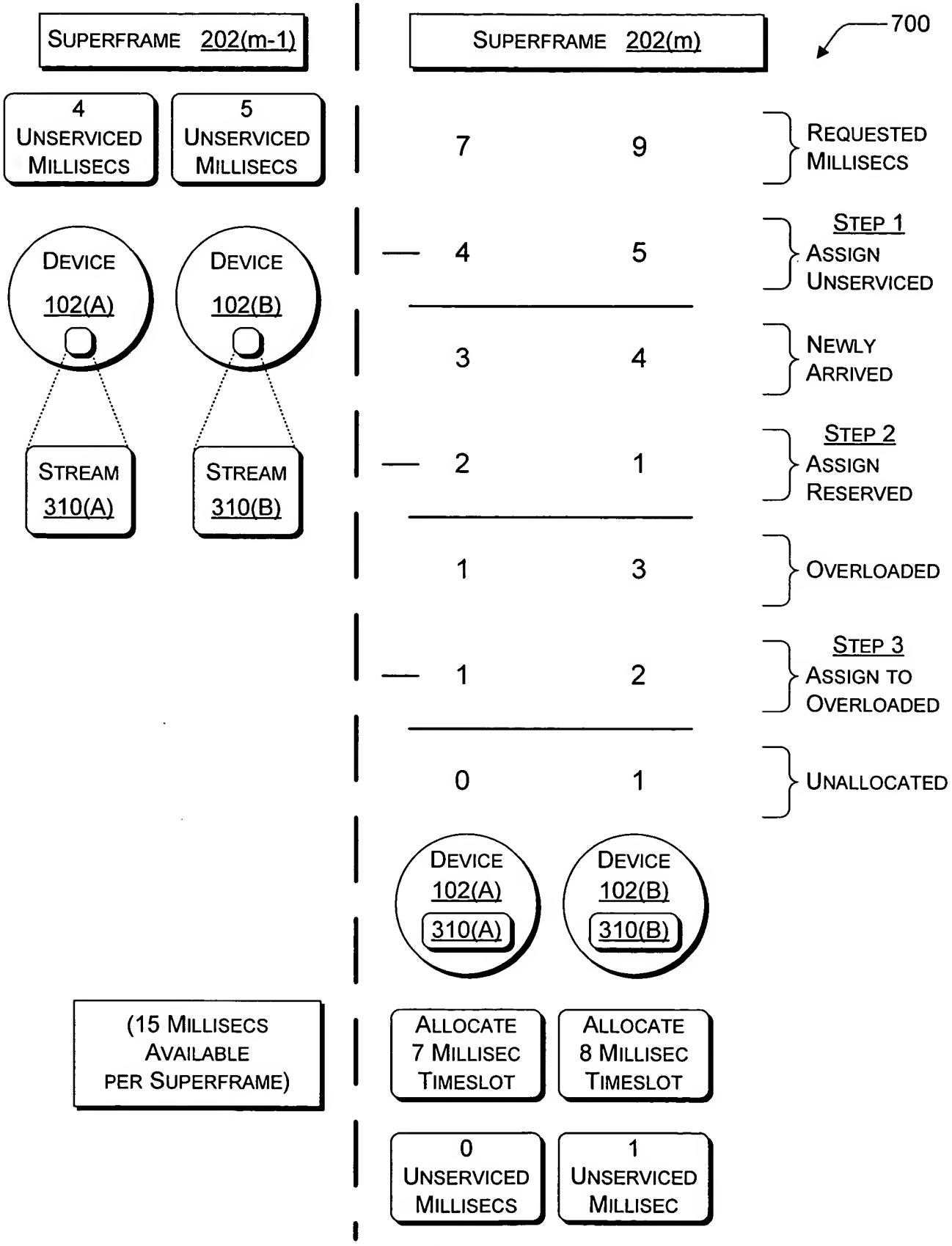
SUPERFRAME 202(m-1)
SUPERFRAME 202(m)
700
4 UNSERVICED MILLISECS
5 UNSERVICED MILLISECS
7
9
REQUESTED MILLISECS
DEVICE 102(A)
DEVICE 102(B)
4
5
STEP 1 ASSIGN UNSERVICED
3
4
NEWLY ARRIVED
STREAM 310(A)
STREAM 310(B)
2
1
STEP 2 ASSIGN RESERVED
1
3
OVERLOADED
1
2
STEP 3 ASSIGN TO OVERLOADED
0
1
UNALLOCATED
DEVICE 102(A) 310(A)
DEVICE 102(B) 310(B)
(15 MILLISECS AVAILABLE PER SUPERFRAME)
ALLOCATE 7 MILLISEC TIMESLOT
ALLOCATE 8 MILLISEC TIMESLOT
0 UNSERVICED MILLISECS
1 UNSERVICED MILLISEC

FIG. 7

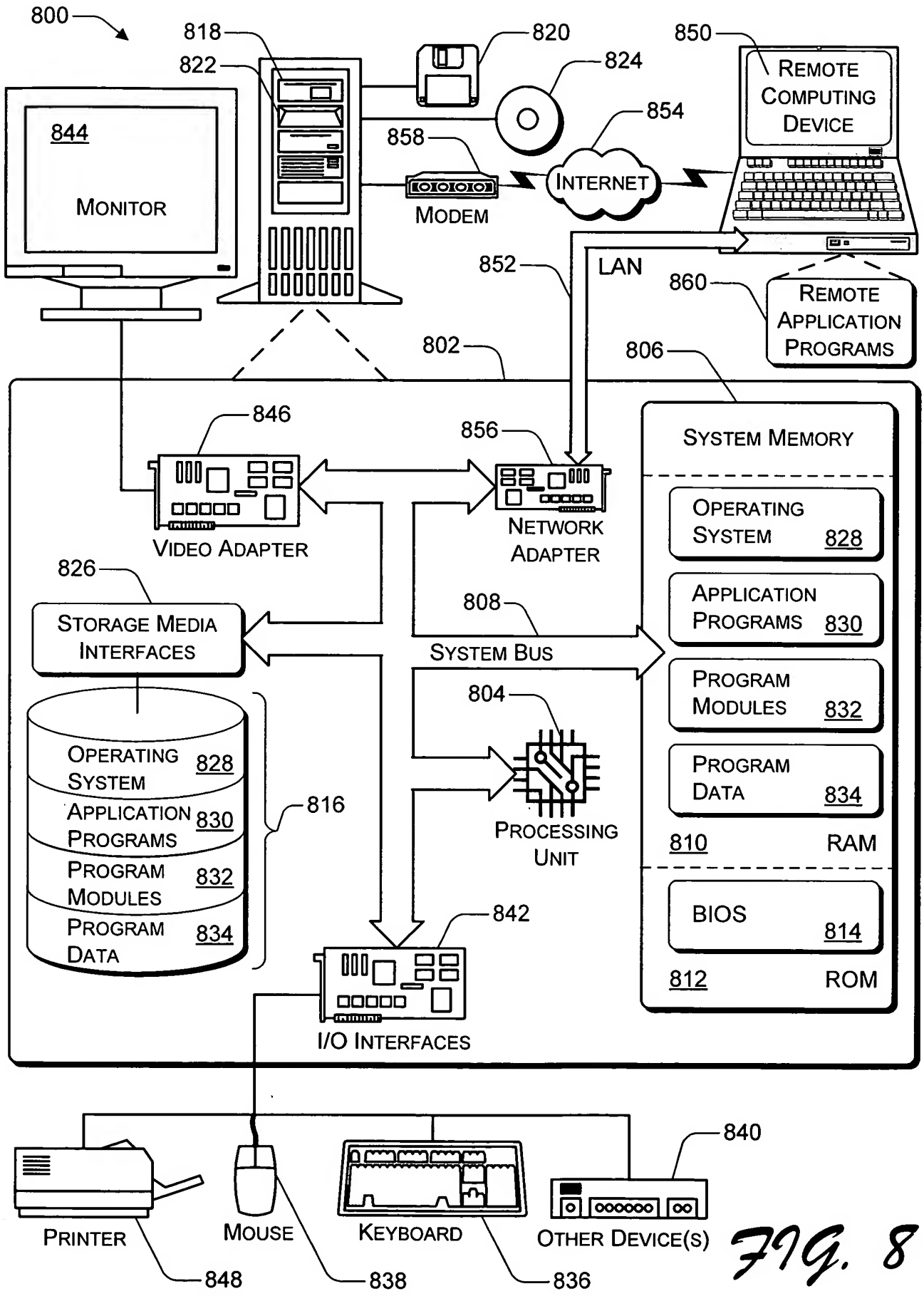
800
818
822
820
824
850
REMOTE COMPUTING DEVICE
844
MONITOR
858
854
INTERNET
MODEM
852
LAN
860
REMOTE APPLICATION PROGRAMS
802
806
846
856
SYSTEM MEMORY
VIDEO ADAPTER
NETWORK ADAPTER
OPERATING SYSTEM 828
826
808
APPLICATION PROGRAMS 830
STORAGE MEDIA INTERFACES
SYSTEM BUS
804
PROGRAM MODULES 832
OPERATING SYSTEM 828
APPLICATION PROGRAMS 830
PROGRAM MODULES 832
PROGRAM DATA 834
816
PROGRAM DATA 834
PROCESSING UNIT
810
RAM
BIOS 814
842
812
ROM
I/O INTERFACES
840
PRINTER
MOUSE
KEYBOARD
OTHER DEVICE(S)
848
838
836

FIG. 8